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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/597,780	06/20/2000	Alessandro Cesare Callegari	YOR-9-2000-0010	6159

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EXAMINER

NGUYEN, HOAN C

ART UNIT	PAPER NUMBER
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2871

DATE MAILED: 04/07/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/597,780

Applicant(s)

CALLEGARI ET AL.

Examiner

HOAN C. NGUYEN

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Am

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1 and 9-13 is/are pending in the application.
- 4a) Of the above claim(s) 2-8 and 14-36 is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1 and 9-13 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. ____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date ____. | 6) <input type="checkbox"/> Other: ____. |

DETAILED ACTION

Election/Restrictions

Applicant's election of Group A (claims 1-3 and 9-13 in Paper No. 15 is acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)).

Applicant cancelled claims 2-3 and 34-36 in the Response to Final Action filed on 30 December 2002; and cancelled claim 21 in the Amendment filed on 22 July 2002. Therefore, the elected Species A remains claims 1 and 9-13.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

1. Claim 1 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. The feature of "aligning the dry alignment layer using at least TWO methods selected from the group consisting of mechanical mask, photo-resist, UV

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treatment and ridge and fringe field" does not disclose in the original specification.

Specification disclose ONLY: *Each of the multi-domain, dry deposited layers are obtained by a method from ONE of mechanical mask, photo-resist, UV treatment and ridge and fringe field* (page 4 lines 13-17, page 5 lines 1-4 and lines 19-22, page 8 line 28 to page 9 line 2). Therefore this feature considers as NEW SUBJECT MATTER.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 1 and 9-10 are rejected under 35 U.S.C. 102(e) as being anticipated by Lieu et al. (US6493050B1).

In regard to claim 1, Lieu et al. teach (Fig. 1A-B, col. 5 line 22 to col. 6 line 19) a method of preparing a multi-domain liquid crystal display comprising the steps of depositing a dry alignment 105 on a substrate and aligning said dry deposited layer using mechanical mask (photo mask) and ridge 114 and fringe field due to gap between pixel electrodes 138.

In regard to claim 9, Lieu et al. teach (Fig. 9A-B, col. 6 lines 8-10) a multi-domain liquid crystal display comprising

- a bottom substrate 104 having a first surface;
- a transparent conductive layer (pixel electrodes 138, thin film transistors (not shown) and other display circuitry, which should consider as the in-plane switching) disposed over said first surface of said bottom substrate.
- a top substrate 102 having a second surface;
- a color filter layer (color filter layer 106 and color filter stacks 112) disposed over a surface of the top substrate;
- a transparent conductive layer 118 disposed over said color filter;
- a first dry deposited layer 107 over said first transparent conductive layer
- a dry deposited layer 107 over said second transparent conductive layer; said second dry deposited layer being spaced adjacent to and facing said first dry deposited layer;
- a plurality of uniformly sized spacer 108 distributing within said space;
- a liquid crystal material 101 disposed in the space therebetween;

wherein

- each of said first dry deposited layer and said second dry deposited layer is divided into a plurality of pixels each having a boundary and at least two domains;
- each of said multi-domain, dry deposited layers is obtained by a method of ridge and fringe field;
- said dry deposited layers are exposed to a particle (ion) beam (col. 6 lines 51-54)

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- said particle/ion beam is enhancively directed at said dry deposited layers at an adjustable angle with respect to said dry deposited layers.
- said domains of the first and second deposited layers are obtained by mechanical mask (photolithographic mask; col. 4 lines 41-42) according to claim 10.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 11-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lieu et al. (US6493050B1) as applied to claims 1 and 9-10 above, in view of Callegari et al. (US6061114A).

In regard to claim 11, Lieu does not disclose the mechanical mask method steps in claims 11,

Callegari et al. teach (Figs. 1-4 and 7-9) a multi-domain, wide viewing angle liquid-crystal display, wherein the mechanical mask method comprises depositing on a substrate a material to form a dry deposited layer (transparent alignment layer with a dry process) for reducing manufacturing steps and low cost (col. 3 lines 8-23); masking said deposited layer into first domain areas and second domain areas of the deposited layer with a mask or domains of alignment layer at selective local area (col. 6 lines 25-

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31); selectively bombarding the deposited layer with an ion beam through the mask as shown in Fig.9 for reducing manufacturing steps and low cost.

In regard to claim 12, Lieu does not disclose the deposited layer formed the dry deposited alignment layer , which is made of hydrogenated diamond-like carbon, amorphous hydrogenated silicon, silicon carbide (SiC), silicon dioxide (SiO₂), glass, silicon nitride (Si₃N₄), alumina (Al₂O₃), cerium(IV) oxide (CeO₂), tin oxide (SnO₂), zinc titanate (ZnTiO₂).

Callegari et al. teach the deposited layer formed the dry deposited alignment layer , which is made of hydrogenated diamond-like carbon, amorphous hydrogenated silicon, silicon carbide (SiC), silicon dioxide (SiO₂), glass, silicon nitride (Si₃N₄), alumina (Al₂O₃), cerium(IV) oxide (CeO₂), tin oxide (SnO₂), zinc titanate (ZnTiO₂) for optical transparent in visible spectrum (col. 7 lines 30-37);

In regard to claim 13, Lieu does not disclose the LCD wherein the beam ion is provided from source of Argon (col. 6 lines 58-65).

Callegari et al. teach the LCD wherein the beam ion is provided from source of Argon (col. 6 lines 58-65) for being rare gas that is not ionized and low cost.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to further modify a multi-domain, wide viewing angle

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liquid-crystal display as Lieu et al. disclosed all limitations in claims 11-13 for reducing manufacturing steps and low cost.

Conclusion

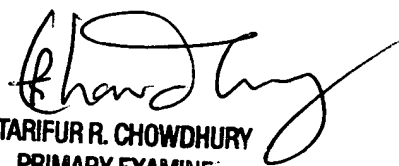
Any inquiry concerning this communication or earlier communications from the examiner should be directed to HOAN C. NGUYEN whose telephone number is (571) 272-2296. The examiner can normally be reached on MONDAY-THURSDAY:8:00AM-4:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kim H Bobert can be reached on (571) 272-2293. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

HOAN C. NGUYEN
Examiner
Art Unit 2871

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TARIFUR R. CHOWDHURY
PRIMARY EXAMINER